

09/966,450

MCP 296

weight of compressed dosage forms made according to the invention is typically less than about 2%, preferably less than about 1%.

In addition, better content uniformity can also be achieved with the present vacuum fill system, since little mechanical agitation is required to cause the powder to flow into the die cavity. In conventional tablet presses, the mechanical agitation required to assure die filling has the adverse effect of segregating small from large particles.

Known powder filling equipment employ vacuum to fill uncompressed powders into capsules or other containers. See, for example, Aronson, U.S. Patent No. 3,656,518 assigned to Perry Industries, Inc. However, these systems have filters that are always in contact with the powder and therefore unsuitable for adaptation to compression machines. Forces on the order of 100kN can be experienced during compression of powders into dosage forms. Such high forces would damage the filters. US Patent No. 4,292,017 and US Patent No. 4,392,493 to Doepel describe a high speed rotary tablet compression machine which uses vacuum die filling. However separate turntables are used for filling and compression. Dies are filled on the first turntable and thereafter transferred to a separate turntable for compression. Advantageously, according to the invention, the filters are protected during compression, since the lower punches move above the filter port prior to the die cavities entering the compression zone.

Powder is fed into the die cavities 132 in the fill zone 102. The powder may preferably consist of a medicant optionally containing various excipients, such as binders, disintegrants, lubricants, fillers and the like, as is conventional, or other particulate material of a medicinal or non-medicinal nature, such as inactive placebo blends for tableting, confectionery blends, and the like. One particularly preferred formulation comprises medicant, powdered wax (such as shellac wax, microcrystalline wax, polyethylene glycol, and the like), and optionally disintegrants and lubricants and is described in more detail in commonly assigned co-pending United States Patent Application Serial No. 09/966,493, entitled "Immediate Release Tablet" (attorney docket number MCP 274) which is hereby incorporated by reference.

Suitable medicants include for example pharmaceuticals, minerals, vitamins and other nutraceuticals. Suitable pharmaceuticals include analgesics, decongestants, expectorants, antitussives, antihistamines, gastrointestinal agents, diuretics, bronchodilators, sleep-inducing agents and mixtures thereof. Preferred pharmaceuticals include acetaminophen, ibuprofen, flurbiprofen, ketoprofen, naproxen, diclofenac, aspirin, pseudoephedrine, phenylpropanolamine, chlorpheniramine maleate, dextromethorphan,

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